

Christopher C. Homes
Department of Physics – Bldg. 510B
Brookhaven National Laboratory
20 Pennsylvania St., P.O. Box 5000, Upton, NY 11973-5000
Phone: (631) 344-7579, Fax: (631) 344-2739
Email: homes@bnl.gov

Biographical Notes

Citizenship: American & Canadian
Date of birth: March 22, 1960
Current status: Physicist (tenure), Brookhaven National Laboratory

Education

Doctor of Philosophy, Physics (August, 1990)

University of British Columbia, Vancouver, British Columbia, Canada

Field of Study: Experimental condensed matter physics (optical properties of solids)

Thesis title: *The optical properties of $(\text{TMTSF})_2\text{ReO}_4$ and $(\text{TMTSF})_2\text{BF}_4$ above and below their metal-insulator transitions.*

Supervisor: Prof. J.E. Eldridge

Master of Science, Physics (November, 1985), University of British Columbia

Thesis title: *The powder absorption spectra of some bis-tetramethyltetraselenafulvalene salts $[(\text{TMTSF})_2X]$, $X=(\text{PF}_6, \text{AsF}_6, \text{SbF}_6, \text{BF}_4, \text{ClO}_4, \text{and ReO}_4)$.*

Supervisor: Prof. J.E. Eldridge

Bachelor of Science (Hons.), Physics (May, 1983)

McMaster University, Hamilton, Ontario, Canada

Research Experience

- 2003- **Physicist (tenure)**, *Infrared Spectroscopy (Electron Spectroscopy Group)*
- 2001-2003 **Physicist**, *Infrared Spectroscopy (Electron Spectroscopy Group)*
- 1998-2001 **Associate Physicist**, *Infrared Spectroscopy (Electron Spectroscopy Group)*
- 1996-1998 **Assistant Physicist**, *Infrared Spectroscopy (Electron Spectroscopy Group)*
Optical properties of solids, UHV thin films techniques, solvated electron systems, transition metal oxides ("bad metals"), colossal magnetoresistance, high-temperature superconductivity, and synchrotron radiation sources and techniques. Local contact for U10A.
Department of Physics & National Synchrotron Light Source
Brookhaven National Laboratory, Upton, NY
- 1994-1996 **Research Associate**, Prof. B.P. Clayman
Optical properties of solids, semiconductors, High- T_c superconductors, C_{60} . Instrumentation development, optical cryogenic and vacuum engineering, and application development.
Department of Physics
Simon Fraser University
- 1992-1994 **NSERC Post-Doctoral Fellow**, Profs. B.P. Clayman and M.W.L. Thewalt, in collaboration with Prof. T. Timusk at McMaster University (Canadian Institute for Advanced Research)
Optical properties of superconductors and correlated electron systems.
Department of Physics
Simon Fraser University, Burnaby, B.C.
- 1990-1992 **Post-Doctoral Research Fellow**, Prof. Tom Timusk
Optical properties (IR, visible and UV) of solids; high-temperature superconductivity; quasicrystals; metallic glasses; electron-phonon coupling in low-dimensional systems; instrumentation and software development.
Department of Physics & Astronomy

- 1984-1990 McMaster University, Hamilton, Ontario.
Graduate Research Assistant, Prof. J.E. Eldridge
Optical properties of solids; models of optical conductivity; synthesis and study of organic conductors; group theory; instrumentation development.
 Department of Physics & Astronomy
 University of British Columbia, Vancouver, B.C.
- 1983 **NSERC Summer Research Assistant**, Prof. J.A. Cameron
Perturbed angular correlation in Heusler alloys; Mössbauer effect; isotope production; instrumentation design and data acquisition
 Department of Physics, McMaster University
- 1982 **NRC Summer Research Assistant**, Dr. T.J. Hughes
Ionospheric physics; field continuation theory
 Herzberg Institute of Astrophysics
 Solar-Terrestrial Physics Section
 National Research Council of Canada, Ottawa, Ontario.

Professional Experience

- 1995-1999 **Idelix™ Software Ltd.**, co-founder and officer of the company until 1999. IDELIX™ Software is a Vancouver-based software company focused on improving the presentation of data and images on computing devices through innovations in Information Visualization. Idelix Software's products provide a solution to the "screen real estate" problem and facilitate business decision-making. The company currently consists of approximately 20 staff members.

555 - 1122 Mainland St., Vancouver, B.C. V6B 5L1, Canada
<http://www.idelix.com>

Teaching Experience

- 1996 **Lecturer**
 Physics 120 – *Modern Physics and Mechanics*
 Simon Fraser University, Burnaby, B.C.
- 1990-1996 **Laboratory Research Supervisor**
Graduate Research (Masters and Doctoral students)
 McMaster & Simon Fraser University
- 1991-1992 **Research Supervisor**
High School Cooperative Education Program
 Hamilton-Wentworth Separate School Board, Hamilton, Ontario
- 1983-1990 **Teaching Assistant**
Demonstrator – Senior Physics Optics and Electronics Labs
Marker – Senior Solid State and Nuclear Physics
 Department of Physics, University of British Columbia

Books and Book Chapters

Peter R. Griffiths and Christopher C. Homes, *Instrumentation for Far-Infrared Spectroscopy*, Wiley Reference Works - Handbook of Vibrational Spectroscopy, Volume 1 - Theory and Instrumentation (Wiley, New York, 2001).

Refereed Publications

1. J.E. Eldridge, C.C. Homes, Frances E. Bates, and G.S. Bates, *Far-infrared powder absorption measurements of some tetramethyltetraselenafulvalene salts [(TMTSF)₂X]*, Phys. Rev. B **32**, 5156-5162 (1985).
2. J.E. Eldridge and C.C. Homes, *Low temperature, small-sample reflectivity measurements in a commercial rapid-scan Michelson interferometer*, Infrared Phys. **29**, 143-148 (1989).
3. C.C. Homes and J.E. Eldridge, *Lattice-mode coupling to the charge-density wave in (TMTSF)₂ReO₄ (where TMTSF is tetramethyltetraselenafulvalene)*, Phys. Rev. B **40**, 6138-6143 (1989).
4. K.E. Kornelsen, J.E. Eldridge, C.C. Homes, H.H. Wang, and J.M. Williams, *Optical properties of the 10 K organic superconductor (BEDT-TTF)₂[Cu(SCN)₂]*, Solid State Commun. **72**, 475-480 (1989).
5. C.C. Homes and J.E. Eldridge, *Infrared optical properties of (TMTSF)₂ReO₄ and (TMTSF)₂BF₄ (where TMTSF is tetramethyltetraselenafulvalene) compared with several model calculations*, Phys. Rev. B **42**, 9522-9533 (1990).
6. J.E. Eldridge and C.C. Homes, *Vibrational assignments in the conductivity spectra of semiconducting (TMTSF)₂ReO₄ and (TMTSF)₂BF₄ (where TMTSF is tetramethyltetraselenafulvalene) for radiation polarized perpendicular to the chains*, Phys. Rev. B **43**, 13971-13977 (1991).
7. C.C. Homes, X. Wu, T. Timusk, Z. Altounian, A. Sahnoune, and J.O. Ström-Olsen, *The optical conductivity of the stable icosahedral quasicrystal Al_{63.5}Cu_{24.5}Fe₁₂*, Phys. Rev. Lett. **67**, 2694-2696 (1991).
8. J.L. Musfeldt, D.B. Tanner, C.C. Homes, M. Almeida, *Temperature dependence of the infrared and optical properties of N-dimethylthiomorpholinium(TCNQ)₂*, Phys. Rev. B **46**, 8777-8789 (1992).
9. C.C. Homes, M. Reedyk, D.A. Crandles, and T. Timusk, *Technique for measuring the absolute reflectance of irregular, submillimeter sized samples*, Appl. Opt. **32**, 2976-2983 (1993).
10. X. Wu, C.C. Homes, T. Timusk, S.L. Cooper, F.S. Pierce, and S.J. Poon, *Optical conductivity of the icosahedral quasicrystal Al_{75.5}Mn_{20.5}Si₄ and its 1/1 crystalline approximant α -Al_{72.5}Mn_{17.4}Si_{10.1}*, J. Phys: Condens. Matter **5**, 5975-5990 (1993).
11. C.C. Homes, J.L. Musfeldt, D.B. Tanner, *Electron-phonon coupling in the quarter-filled TCNQ salt NPrQ(TCNQ)₂*, Phys. Rev. B **48**, 16799 (1993).
12. C.C. Homes, T. Timusk, R. Liang, D.A. Bonn and W.N. Hardy, *Optical properties along the c-axis of YBa₂Cu₃O_{6.70}: evidence for a pseudogap*, Phys. Rev. Lett. **71**, 1645-1648 (1993).
13. C.C. Homes, P.J. Horoyski, M.L.W. Thewalt, and B.P. Clayman, *Anomalous splitting of the F_{1u} (\rightarrow 3F_u) vibrations in single-crystal C₆₀ below the orientational-ordering transition*, Phys. Rev. B **49** (Rapid Commun.), 7052-7055 (1994).
14. J.E. Eldridge, C.C. Homes, H. Hau Wang, A.M. Kiri, and J.M. Williams, *The assignment of the normal modes of BEDT-TTF using the infrared and Raman spectra of several isotopic analogs*, Spectrochim. Acta. **51A**, 947-960 (1995).
15. C.C. Homes, M. Ziaei, B.P. Clayman, J.C. Irwin, and J.P. Franck, *Softening of a Reststrahlen band in CuO near the Néel transition*, Phys. Rev. B **51**, 3140-3150 (1995).
16. C.C. Homes, T. Timusk, D.A. Bonn R. Liang, and W.N. Hardy, *Optical phonons polarized along the c-axis of YBa₂Cu₃O_{6+x} for x=0.5 \rightarrow 0.95*, Can. J. Phys. **73**, 663-675 (1995).

17. T. Timusk, D.N. Basov, and C.C. Homes, *The strange interplane conductivity of HTSC*, J. Phys. Chem. Solids **56**, 1821-1823 (1995).
18. C.C. Homes, T. Timusk, R. Liang, D.A. Bonn and W.N. Hardy, *Optical properties along the c-axis of $YBa_2Cu_3O_{6+x}$ for $x=0.5 \rightarrow 0.95$: evolution of the pseudogap*, Physica C **254**, 265-280 (1995).
19. T. Timusk, D.N. Basov, C.C. Homes, A.V. Puchkov, and M. Reedyk, *Gap states in HTSC by infrared spectroscopy*, J. Superconductivity **8**, 437 (1995).
20. C.C. Homes, P.J. Horoski, B.P. Clayman, M.L.W. Thewalt, and T.R. Anthony, *The effects of isotopic disorder on the F_u modes in crystalline C_{60}* , Phys. Rev. B **52**, 16892-16900 (1995).
21. D.A. Bonn, S. Kamal, A. Bonakdarpour, Ruixing Liang, W.N. Hardy, C.C. Homes, D.N. Basov, and T. Timusk, *Surface Impedance Studies of YBCO*, Czech. J. Phys. **46**, 3195-3202 (1996).
22. J.E. Eldridge, Y. Lin, C.C. Homes, H.H. Wang, J.M. Williams, A.M. Kiri, and J.A. Schlueter, *Infrared and Raman studies of the organic superconductor κ -(BEDT-TTF) $_2$ [Cu(NCS) $_2$] and its $^{13}C(4)$ isotopic analog*, Spectrochim. Acta. **53A**, 565-573 (1997).
23. C.C. Homes, B.P. Clayman, J.L. Peng and R.L. Greene, *Optical properties of $Nd_{1.85}Ce_{0.15}CuO_4$* , Phys. Rev. B **56**, 5525-5534 (1997).
24. C.C. Homes, B.P. Clayman, J.L. Peng, and R.L. Greene, Reply to Comment on 'Optical Properties of $Nd_{1.85}Ce_{0.15}CuO_4$ ', Phys. Rev. B **58**, 14623-14624 (1998).
25. C.C. Homes, S. Kamal, D.A. Bonn, Ruixing Liang, W.N. Hardy, and B.P. Clayman, *Determination of the condensate from optical techniques in unconventional superconductors*, Physica C **296**, 230-240 (1998).
26. C.C. Homes, J.L. Peng, R.L. Greene, and B.P. Clayman, *Optical conductivity of $Nd_{1.85}Ce_{0.15}CuO_4$: strength of the condensate*, J. Phys. Chem. Solids **59**, 1979-1981 (1998).
27. A.W. McConnell, B.P. Clayman, C.C. Homes, M. Inoue, and H. Negishi, *Polarized reflectance measurements of the CDW transitions in η - Mo_4O_{11} and γ - Mo_4O_{11}* , Phys. Rev. B **58**, 13565-13573 (1998).
28. D.N. Basov, S.I. Woods, A.S. Katz, E.J. Singley, R.C. Dynes, M. Xu, D.G. Hinks, C.C. Homes, and M. Strongin, *Sum rules and interlayer conductivity of High- T_c cuprates*, Science **283**, 49-53 (1999).
29. D.A. Crandles, B. Nicholas, C. Dreher, C.C. Homes, A.W. McConnell, B.P. Clayman, W.H. Gong, and J.E. Greedan, *Optical properties of highly reduced $SrTiO_{3-x}$* , Phys. Rev. B **59**, 12842-12846 (1999).
30. J.P. Franck, I. Isaac, Weimin Chen, J. Chrzanowski, J.C. Irwin, and C.C. Homes, *Isotope studies of the CMR compounds $La_{1-x}Ca_xMnO_{3+\delta}$* , J. Superconductivity **12**, 263-267 (1999).
31. V. Golovanov, L. Mihaly, C.C. Homes, W.H. McCarroll, K.V. Ramanujachary, and M. Greenblatt, *Temperature and magnetic field dependent optical spectral weight in the cation-deficient colossal-magnetoresistance material $La_{0.936}Mn_{0.982}O_3$* , Phys. Rev. B **59**, 153-156 (1999).
32. C.C. Homes, D.A. Bonn, Ruixing Liang, W.N. Hardy, D.N. Basov, T. Timusk, and B.P. Clayman, *Effect of Ni impurities on the optical properties of $YBa_2Cu_3O_{6+y}$* , Phys. Rev. B **60**, 9782-9792 (1999).
33. P.F. Henning, C.C. Homes, S. Maslov, G.L. Carr, D.N. Basov, B. Nikolic, and M. Strongin, *Infrared studies of the onset of conductivity in ultrathin Pb films*, Phys. Rev. Lett. **83**, 4880-4883 (1999).
34. G. Cao, J.E. Crow, R.P. Guertin, P.F. Henning, C.C. Homes, M. Strongin, D.N. Basov, and E. Lochner, *Charge density wave formation accompanying ferromagnetic ordering in quasi-one-dimensional $BaIrO_3$* , Solid State Commun. **113**, 657-662 (2000).

35. C.C. Homes, A.W. McConnell, B.P. Clayman, D.A. Bonn, Ruixing Liang, W.N. Hardy, M. Inoue, H. Negishi, P. Fournier, and R.L. Greene, *Phonon screening in high-temperature superconductors*, Phys. Rev. Lett. **84**, 5391-5394 (2000).
36. R.S. Jackson, K.H. Michaelian, and C.C. Homes, *Photoacoustic spectroscopy using a synchrotron light source*, in *Fourier Transform Spectroscopy*, OSA Technical Digest (Optical Society of America, Washington DC, 2001), pp. 161-163.
37. D. N. Basov, C.C. Homes, E. J. Singley M. Strongin, T. Timusk, G. Blumberg, and D. van der Marel, *Unconventional energetics of the pseudogap state and superconducting state in high-T_c cuprates*, Phys. Rev. B **63**, 134514 (2001), (9 pages).
38. J.M. Pigos, B.R. Jones, Z.-T. Zhu, J.L. Musfeldt, C.C. Homes, H.-J. Koo, M.L. Whangbo, J.A. Schlueter, B.H. Ward, H.H. Wang, U. Geiser, J. Mohtasham, R. W. Winter, and G.L. Gard, *Infrared and optical properties of β' -(ET)₂SF₃CF₂SO₃: Evidence for a 45 K spin-Peierls transition*, Chem. Mater. **13**, 1326-1333 (2001).
39. G. Tzamalīs, N.A. Zaidi, C.C. Homes, and A.P. Monkman, *Infrared optical properties of polyaniline doped with 2-acrylamido-2-methyl-1-propanesulphonic acid (AMPSA)*, J. Phys.: Condens. Matter **13**, 6297 (2001).
40. C.C. Homes, T. Vogt, S.M. Shapiro, S. Wakimoto, and A.P. Ramirez, *Optical response of high-dielectric-constant perovskite-related oxide*, Science **293**, 673-676 (2001).
41. J.J. Tu, G.L. Carr, V. Perebeinos, C.C. Homes, M. Strongin, P.B. Allen, W.N. Kang, Eun-Mi Choi, Hyeong-Jin Kim, and Sung-Ik Lee, *Optical properties of c-axis oriented superconducting MgB₂ thin films*, Phys. Rev. Lett. **87**, 277001 (2001), (4 pages).
42. K.H. Michaelian, R.S. Jackson and C.C. Homes, *Synchrotron infrared photoacoustic spectroscopy*, Rev. Sci. Instrum. **72**, 4331 (2001).
43. C. Bernhard, T. Holden, J. Humlicek, D. Munzar, A. Golnik, M. Klasner, Th. Wolf, L. Carr, C. Homes, B. Keimer, and M. Cardona, *In-plane polarized collective modes in detwinned YBa₂Cu₃O_{6.95} observed by spectral ellipsometry*, Solid State Commun. **121**, 93-97 (2002).
44. D.N. Basov, A.M. Bratkovsky, P.F. Henning, B. Zink, F. Hellman, Y.J. Wang, C.C. Homes, and M. Strongin, *Infrared probe of metal-insulator transition in Si_{1-x}Gd_x and Si_{1-x}Y_x amorphous alloys in magnetic field*, Europhys. Lett. **57**, 240-246 (2002) (cond-mat/0104245).
45. J.J. Tu, C.C. Homes, G.D. Gu, and M. Strongin, *A systematic study of phonon properties in optimally-doped Bi₂Sr₂CaCu₂O_{8+δ}*, Physica B **316-317**, 324-327 (2002).
46. J.J. Tu, C.C. Homes, G.D. Gu, D.N. Basov, and M. Strongin, *Optical studies of charge dynamics in the optimally-doped Bi₂Sr₂CaCu₂O_{8+δ}s*, Phys. Rev. B **66**, 144514 (2002).
47. S.V. Dordevic, E.J. Singley, D.N. Basov, S. Komiya, X.F. Sun, Y. Abe, Y. Ando, E. Bucher, C.C. Homes, and M. Strongin, *Global trends in the interplane penetration depth of layered superconductors*, Phys. Rev. B **65**, 134511 (2002).
48. Lixin He, J.B. Neaton, Morrell H. Cohen, David Vanderbilt, and C.C. Homes, *A first principles study of the structure and lattice dielectric response of CaCu₃Ti₄O₁₂*, Phys. Rev. B **65**, 214112 (2002).
49. G. Tzamalīs, N.A. Aaidi, C.C. Homes, and A.P. Monkman, *Doping dependent studies of the Anderson-Mott localization in polyaniline at the metal-insulator boundary*, Phys. Rev. B **66**, 085202 (2002).

50. C.C. Homes, Q. Li, P. Fournier, and R.L. Greene, *Optical properties of Pr_2CuO_4* , Phys. Rev. B **66**, 144511 (2002).
51. J. J. Tu, C.C. Homes and M. Strongin, *Optical properties of ultra thin films: evidence for a dielectric anomaly at the insulator to metal transition*, Phys. Rev. Lett. **90**, 017402 (2003).
52. C.C. Homes, T. Vogt, S.M. Shapiro, S. Wakimoto, M.A. Subramanian, and A.P. Ramirez, *Charge transfer in the high dielectric constant materials $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ and $\text{CdCu}_3\text{Ti}_4\text{O}_{12}$* , Phys. Rev. B **67**, 092106 (2003).
53. T. Timusk and C.C. Homes, *The role of magnetism in forming the c -axis spectral peak at 400 cm^{-1} in high temperature superconductors*, Solid State Commun. **126**, 63-69 (2003).
54. N. L. Wang, P. Zheng, T. Feng, G. D. Gu, C. C. Homes, J. M. Tranquada, B. D. Gaulin, and T. Timusk, *Infrared properties of $\text{La}_{2-x}(\text{Ca},\text{Sr})_x\text{CaCu}_2\text{O}_{6+\delta}$ single crystals*, Phys. Rev. B **67**, 134526 (2003).
55. C.C. Homes, J.M. Tranquada, Q. Li, A.R. Moodenbaugh, and D.J. Buttrey, *Mid-infrared conductivity from mid-gap states associated with charge stripes*, Phys. Rev. B **67**, 184516 (2003), cond-mat/0207003.
56. C.C. Homes, S.V. Dordevic, D.A. Bonn, R. Liang and W.N. Hardy, *Conductivity sum rules and energy scales in the high-temperature superconductors $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$* , Phys. Rev. B **69**, 024514 (2004), cond-mat/0303506.
57. C.C. Homes, S.V. Dordevic, M. Strongin, D.A. Bonn, R. Liang, W.N. Hardy, S. Komiyama, Y. Ando, G. Yu, N. Kaneko, X. Zhao, M. Greven, D.N. Basov and T. Timusk, *A universal scaling relation in high-temperature superconductors*, Nature **430**, 539-541 (2004).
58. S.V. Dordevic, E.J. Singley, J.H. Kim, M.B. Maple, S. Komiyama, O. Shimpei, Y. Ando, T. Room, R. Liang, D.A. Bonn, W.N. Hardy, J.P. Carbotte, C.C. Homes, M. Strongin, and D.N. Basov, *Signatures of bilayer splitting in the c -axis optical conductivity of double layer cuprates*, Phys. Rev. B **69**, 094511 (2004).
59. J. Hwang, T. Timusk, A.V. Puchkov, N.L. Wang, G.D. Gu, C.C. Homes, J.J. Tu, and H. Eisaki, *Marginal Fermi liquid analysis of 300 K reflectance of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$* , Phys. Rev. B **69**, 094520 (2004).
60. A. Zimmers, R.P.S.M. Lobo, N. Bontemps, C.C. Homes, M.C. Barr, Y. Dagan, and R.L. Greene, *Infrared signature of the superconducting state in $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$* , Phys. Rev. B **70**, 132502 (2004).
61. J.-H. Kim, Y. Lee, C.C. Homes, J.-S. Rhyee, B.K. Cho, S.-J. Oh, and E.J. Choi, *Optical spectroscopy study of the electronic structure of $\text{Eu}_{1-x}\text{Ca}_x\text{B}_6$* , Phys. Rev. B **71**, 075105 (2005).
62. I. Kézsmárki, G. Mihály, R. Gaál, N. Barisic, H. Berger, L. Forró, C.C. Homes, and L. Mihály, *Pressure induced suppression of the singlet insulator phase in BaVS_3 : infrared optical study*, Phys. Rev. B **71**, 193103 (2005).
63. C. C. Homes, S. V. Dordevic, D. A. Bonn, R. Liang, W. N. Hardy, and T. Timusk, *Coherence, incoherence and scaling along the c axis of $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$* , Phys. Rev. B **71**, 184515 (2005).
64. A. Zimmers, J.M. Tomczak, R.P.S.M. Lobo, N. Bontemps, C.P. Hill, M.C. Barr, Y. Dagan, R.L. Greene, A.J. Millis, and C.C. Homes, *Infrared properties of electron-doped cuprates: tracking normal state gaps and quantum critical behavior in $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$* , Europhys. Lett. **70**, 225-231 (2005).
65. S.V. Dordevic, C.C. Homes, J.J. Tu, T. Valla, M. Strongin, P.D. Johnson, G.D. Gu, and D.N. Basov, *Extracting the electron-boson spectral function $\alpha^2F(\omega)$ from infrared and photoemission data using inverse theory*, Phys. Rev. B **71**, 104529 (2005).
66. T. Valla, T.E. Kidd, P.D. Johnson, K.W. Kim, C.C. Homes, and G. Gu, *Doping of a one-dimensional Mott insulator: photoemission and optical studies of Sr_2CuO_3* , submitted to Phys. Rev. Lett. (cond-mat/0403486).

67. J.J. Tu, C. C. Homes, L. H. Greene, G. D. Gu, and M. Strongin, *The absence of superfluid response in ac and bc-plane optical conductivities of optimally-doped Bi2212 single crystals in the surface region*, cond-mat/0307582.
68. C.C. Homes, S.V. Dordevic, T. Valla and M. Strongin, *Scaling of the superfluid density in high-temperature superconductors*, submitted to Phys. Rev. B (cond-mat/0410719).

Non-refereed Publications

Conference Proceedings

1. C.C. Homes and J.E. Eldridge, *The optical properties of (TMTSF)₂ReO₄ and (TMTSF)₂BF₄ through the metal-insulator transition for Ella*, Synthetic Metals **27**, **B49-B55** 3-4 (1988).
2. C.C. Homes and J.E. Eldridge, *The infrared conductivities of semiconducting (TMTSF)₂ReO₄ and (TMTSF)₂BF₄, compared with several model calculations*, Organic Superconductivity, edited by V.Z. Kresin and W.A. Little (Plenum Press, New York, 1990), pp. 89-98.
3. Sahnoune, J.O. Ström-Olsen, Z. Altounian, C.C. Homes, T. Timusk, and X. Wu, *Electronic properties of icosahedral Al_{63.5}Cu_{24.5}Fe₁₂*, Fourth International Conference on Quasicrystals, St. Louis, MO, May 31 - June 5, 1992. J. Non-Cryst. Solids **153-154**, 343-346 (1992).
4. T. Timusk, C.C. Homes, N. Cao, and D.B. Tanner, *Anisotropic optical conductivity of YBa₂Cu₃O_{7.8}* Beijing International Conference on Superconductivity, edited by Z.Z. Gan, S.S. Xie, and Z.X. Zhao (World Scientific, Singapore, 1993), pp. 408-415.
5. K. Kamarás, D. van der Marel, C.C. Homes, and T. Timusk, *The use of far-infrared ellipsometry in the study of high-temperature superconductors: possibilities and limitations*, Materials and Mechanisms of Superconductivity/High Temperature Superconductors, Grenoble, France, June 4-9, 1994, Physica C **235-240**, 1085-1086 (1994) Part II.
6. J.E. Eldridge, C.C. Homes, H.H. Wang, A.M. Kini, and J.M. Williams, *Frequencies of fundamental vibrations of BEDT-TTF, using infrared and Raman spectra of ¹³C, ³⁴S and ²H substituted molecules*, Synthetic Metals **70**, 983-984 (1995).
7. T. Timusk, C.C. Homes and W. Reichardt, *The role of c-axis polarized phonons in high-temperature superconductors*, International Workshop on the Anharmonic Properties of High-T_c Cuprates, Bled, Slovenia, September 1-6, 1994, published by World Scientific, Singapore, edited by G. Runai.
8. T. Timusk, D.N. Basov, C.C. Homes, A.V. Puchkov, and M. Reedyk, *Gap states in HTSC by infrared spectroscopy*, University of Miami Workshop on High-Temperature Superconductivity, Coral Gables, FL, Jan. 5-11, 1995, J. Superconductivity **8**, 437-440 (1995).
9. T. Timusk, N. Cao, D.N. Basov, and C.C. Homes, *The unconventional electrodynamics of High-T_c and organic superconductors*, Spectroscopic Studies of Superconductors, San Jose, CA, Jan. 29-Feb. 1, 1996. SPIE Proceedings, Vol. **2696**, 2-12 (1996).
10. C.C. Homes, Q. Song, B.P. Clayman, R. Liang, D.A. Bonn, and W.N. Hardy, *The effect of Ni doping on the optical conductivity of YBa₂Cu₃O_{6+x}*, Spectroscopic Studies of Superconductors, San Jose, CA, Jan. 29 - Feb. 1, 1996. SPIE Proceedings Vol. **2696**, 101-106 (1996).
11. W.N. Hardy, S. Kamal, R. Liang, D.A. Bonn, C.C. Homes, D.N. Basov, and T. Timusk, *Microwave measurements of the penetration depth in High-T_c single crystals*, 10th Anniversary HTS Workshop on Physics, Materials and Applications, Houston, TX, Mar. 12-16, 1996 (World Scientific, Singapore, 1996), pp. 223-227.

12. C.C. Homes, J.J. Tu, M. Strongin, A.W. McConnell, B.P. Clayman, D.A. Bonn, Ruixing Liang, W.N. Hardy, M. Inoue, H. Negishi, P. Fournier, and R.L. Greene, *The role of phonons in high-temperature superconductivity – is there one?*, Proceedings of the International Conference on the Low Energy Electrodynamics in Solids (LEES 02), Montauk (Long Island), NY, October 13-18, 2002.
http://solidstate.physics.sunysb.edu/lees2002/speakers/homes/homes_phonons.pdf
13. G. Tzamalīs, N. A. Zaidi, C. C. Homes, and A. P. Monkman, *Doping dependent optical properties of polyaniline films*, *Synthetic Metals* **135**, 369-370 (2003).
14. C.C. Homes, S.V. Dordevic, D.A. Bonn, R. Liang, W.N. Hardy, *Energy Scales in the High- T_c Superconductor $YBa_2Cu_3O_{6+x}$* , Proceedings of the International Conference on Dynamical Inhomogenities in Complex Oxides, Bled, Slovenia, June 14-20 (2003). *J. Superconductivity* **17**, 93-96 (2004).
15. Zimmers, N. Bontemps, R.P.S.M. Lobo, C.P. Hill, M.C. Barr, R.L. Greene, C.C. Homes, and A.J. Millis, *Optical properties of $(Pr,Ce)_2CuO_4$* , submitted to the NATO Advanced Research Workshop Proceedings (Miami, January 2004), (cond-mat/0404466).

Abstracts for Conference Presentations

1. C.C. Homes and T.J. Hughes, *An evaluation of numerical methods to infer ionospheric currents from MAGSAT data*, *EOS* **63**, 1079 (1982), Fall Meeting of the American Geophysical Union, San Francisco, CA, December 7-15, 1982.
2. C.C. Homes, J.E. Eldridge and G.S. Bates, *Far-infrared powder absorption spectra of some $(TMTSF)_2X$ salts*, *Bull. Am. Phys. Soc.* **30**, 635 (1985). March Meeting of the American Physical Society, Baltimore, MD, March, 1985.
3. J.E. Eldridge and C.C. Homes and G.S. Bates, *Far-infrared optical properties of some organic conductors and superconductors*, *Bull. Can. Assoc. Phys.* **41**, 48 (1985). Canadian Association of Physicists Congress, Fredericton, N.B., Canada, June 24-26, 1985.
4. C.C. Homes and J.E. Eldridge, *The optical properties of $(TMTSF)_2ReO_4$ and $(TMTSF)_2BF_4$ through the metal-insulator transition*, *Bull. Am. Phys. Soc.* **33**, 786 (1988). March Meeting of the American Physical Society, New Orleans, LA, March 21-25, 1988.
5. C.C. Homes and J.E. Eldridge, *Optical properties of the organic conductors $(TMTSF)_2ReO_4$ and $(TMTSF)_2BF_4$ above and below their metal-insulator transitions compared with model calculations*, *Bull. Am. Phys. Soc.* **36**, 822 (1991). March Meeting of the American Physical Society, Cincinnati, OH, March 18-22, 1991.
6. C.C. Homes, X. Wu, T. Timusk, Z. Altounian, A. Sahnoune, J.O. Ström-Olsen, B.D. Biggs, F.S. Pierce, and S.J. Poon, *Optical conductivity of the icosahedral quasicrystals $Al_{63.5}Cu_{24.5}Fe_{12}$ and $Al_{65}Cu_{20}Ru_{15}$* , *Bull. Am. Phys. Soc.* **37**, 616 (1992). March Meeting of the American Physical Society, Indianapolis, IN, March 16-20, 1992.
7. N. Cao, C.C. Homes, T. Timusk and R. Liang, *Optical conductivity of $YBa_2Cu_3O_{7-\delta}$ along the c axis*, *Bull. Am. Phys. Soc.* **37**, 282 (1992). March Meeting of the American Physical Society, Indianapolis, IN, March 16-20, 1992.
8. X. Wu, C.C. Homes, T. Timusk, B.D. Biggs, F.S. Pierce, and S.J. Poon, *Optical conductivity of the icosahedral quasicrystal $Al_{75.5}Mn_{20.4}Si_4$ and its crystalline approximant $Al_{72.5}Mn_{17.4}Si_{10.1}$* , *Physics in Canada* **48**, 91 (1992). Annual Congress of the Canadian Association of Physicists, Windsor, Ont., June 14-17, 1992.

9. N. Cao, C.C. Homes, T. Timusk, R. Liang and W.N. Hardy, *Optical phonons in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ along the c-axis*, Physics in Canada **48**, 86 (1992). Annual Congress of the Canadian Association of Physicists, Windsor, Ont., June 14-17, 1992.
10. C.C. Homes, N. Cao, T. Timusk, R. Liang and W.N. Hardy, *Optical conductivity of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ along the c axis*, Physics in Canada **48**, 85 (1992). Annual Congress of the Canadian Association of Physicists, Windsor, Ont., June 14-17, 1992.
11. C.C. Homes, N. Cao, T. Timusk, R. Liang, and W.N. Hardy, *Optical conductivity of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ along the c axis for $\delta=0.05, 0.1$ and 0.15* , Bull. Am. Phys. Soc. **38**, 227 (1993). March Meeting of the American Physical Society, Seattle, WA, March 22-26, 1993.
12. J.E. Eldridge, C.C. Homes, A.M. Kiri, H.H. Wang and J.M. Williams, *The effect of ^{13}C isotopic substitution on the polarized infrared conductivity spectra of $\kappa\text{-(BEDT-TTF)}_2\text{Cu[N(CN)}_2\text{]Br}$* , Gordon Research Conference on Organic Superconductors, Il Ciocco, Italy, May 9-14, 1993.
13. C.C. Homes, T. Timusk, R. Liang, D.A. Bonn, and W.N. Hardy, *Optical properties along the c axis of $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ for $x=0.70, 0.80, 0.85, 0.90$ and 0.95* , Physics in Canada **49**, 66 (1993). Annual Congress of the Canadian Association of Physicists, Vancouver, B.C., June 13-16, 1993.
14. T. Timusk, C.C. Homes, R. Liang, D.A. Bonn, and W.N. Hardy, *Optical phonon spectra of $\text{YBa}_2\text{Cu}_3\text{O}_{6.70}$ along the c axis*, Bull. Am. Phys. Soc. **39**, 656 (1994). March Meeting of the American Physical Society, Pittsburgh, PA, March 21-25, 1994.
15. C.C. Homes, *Pseudogap in c-axis optical conductivity of oxygen-reduced $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$* , Bull. Am. Phys. Soc. **39**, 580 (1994). March Meeting of the American Physical Society, Pittsburgh, PA, March 21-25, 1994.
16. Q. Song, C.C. Homes, B.P. Clayman, D.A. Bonn, R. Liang, and W.N. Hardy, *Optical properties of $\text{YBa}_2(\text{Cu}_{1-x}\text{Ni}_x)\text{O}_{6.95}$ for $x=0 \rightarrow 1.4\%$* , Bull. Am. Phys. Soc. **40**, 692 (1995). March Meeting of the American Physical Society, San Jose, CA, March 20-24, 1995.
17. C.C. Homes, P.J. Horoski, B.P. Clayman, M.L.W. Thewalt, and T.R. Anthony, *Isotopic behavior of the F_u modes in single crystal C_{60}* , Bull. Am. Phys. Soc. **40**, 101 (1995). March Meeting of the American Physical Society, San Jose, CA, March 20-24, 1995.
18. A.W. McConnell, X.-Z. Wang, C.C. Homes, and B.P. Clayman, *Reflectance measurements on $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8-\delta}$ crystals doped with Zn and Y*, Bull. Am. Phys. Soc. **41**, 728 (1996). March Meeting of the American Physical Society, St. Louis, MO, March 18-22, 1996.
19. T. R  m, S. Moffat, T. Timusk, D. Basov, C.C. Homes, P. Roy, A. Naccura, R. Liang, D. Bonn, and W.N. Hardy, *An infrared study of the interplane conductivity in Zn and Ni doped $\text{YBa}_2\text{Cu}_3\text{O}_{6.6}$* , Bull. Am. Phys. Soc. **42**, 482 (1997). March Meeting of the American Physical Society, Kansas City, MO, March 17-21, 1997.
20. C.C. Homes, B.P. Clayman, J.-L. Peng, and R.L. Greene, *The optical conductivity of a $\text{Nd}_{1.85}\text{Ce}_{0.15}\text{CuO}_4$ single crystal above and below T_c* , Bull. Am. Phys. Soc. **42**, 545 (1997). March Meeting of the American Physical Society, Kansas City, MO, March 17-21, 1997.
21. A.W. McConnell, B.P. Clayman, C.C. Homes, and M. Inoue, *Polarized reflectivity measurements of $\eta\text{-Mo}_4\text{O}_{11}$* , Physics in Canada **53**, 64 (1997). Annual Congress of the Canadian Association of Physicists, Calgary, AL, June 8-11, 1997.
22. A. McConnell, B.P. Clayman, C.C. Homes, M. Inoue, and H. Negishi, *Polarized reflectance measurements of the 2D charge-density-wave material Mo_4O_{11}* , Bull. Am. Phys. Soc. **43**, 919 (1998). March Meeting of the American Physical Society, Los Angeles, CA, March 16-20, 1998.

23. M. Strongin, C.C. Homes, G.L. Carr, P.F. Henning, and D.N. Basov, *The nature of electronic states and ac conductivity in ultra-thin Pb films*, Bull. Am. Phys. Soc. **43**, 841 (1998). March Meeting of the American Physical Society, Los Angeles, CA, March 16-20, 1998.
24. C.C. Homes, I. Isaac, Weimin Chen, and J.P. Franck, *The oxygen isotope effect on the optical properties of $\text{La}_{0.65}\text{Ca}_{0.35}\text{MnO}_3$ above and below the insulator-metal transition*, Bull. Am. Phys. Soc. **43**, 384 (1998). March Meeting of the American Physical Society, Los Angeles, CA, March 16-20 (1998).
25. P.F. Henning, C.C. Homes, G.L. Carr, D.N. Basov, S. Maslov, and M. Strongin, *Infrared studies on the effects of localization in ultra-thin films*, Bull. Am. Phys. Soc. **44**, 1793 (1999). March Meeting of the American Physical Society, Atlanta, GA, March 20-26 (1999).
26. C.C. Homes, B.P. Clayman, D.A. Bonn, Ruixing Liang, and W.N. Hardy, *The effect of Ni impurities on the optical properties of $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$* , Bull. Am. Phys. Soc. **44**, 557 (1999). March Meeting of the American Physical Society, Atlanta, GA, March 20-26 (1999).
27. J.M. Pigos, B.R. Jones, Z. Zhu, J.L. Musfeldt, C.C. Homes, J.A. Schleuter, B.H. Ward, U. Geiser, H.-J. Koo, M.-H. Whangbo, P.G. Nixon, R.W. Winter, G.L. Gard, and V.M. Yartsev, *Infrared and optical properties of $\beta\text{-(ET)}_2\text{SF}_5\text{CF}_3\text{SO}_3$: a new spin-Peierls material?*, Bull. Am. Phys. Soc. **45**, 856 (2000). March Meeting of the American Physical Society, Minneapolis, MN, March 20-24, 2000.
28. C.C. Homes, J.M. Tranquada and D.J. Buttrey, *Optical properties of $\text{La}_2\text{NiO}_{4+\delta}$ for $\delta=2/15$* , Bull. Am. Phys. Soc. **45**, 125 (2000). March Meeting of the American Physical Society, Minneapolis, MN, March 20-24, 2000.
29. C.C. Homes, T. Vogt, S.M. Shapiro, S. Wakimoto, *The infrared optical properties of $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$* , Bull. Am. Phys. Soc. **46**, 1142 (2001). March Meeting of the American Physical Society, Seattle, WA, March 12-16, 2001.
30. M. Strongin, J.J. Tu, C.C. Homes, S. Maslov, D.N. Basov, *Optical conductivity as a probe of the nature of ultra-thin layers*, Bull. Am. Phys. Soc. **46**, 1067 (2001). March Meeting of the American Physical Society, Seattle, WA, March 12-16, 2001.
31. A.A. Sirenko, P.C. Eklund, C. Bernhard, Todd Holden, C. Homes, N. Marinkovic, D.A. Walters, M.J. Casavant, J. Schmidt, R.E. Smalley, *Anisotropy of the optical conductivity and infrared-active optical phonons in magnetically aligned single wall carbon nanotubes*, Bull. Am. Phys. Soc. **46**, 887 (2001). March Meeting of the American Physical Society, Seattle, WA, March 12-16, 2001.
32. L. Mihaly, G. Mihaly, I. Kezsmarki, L. Forro, H. Berger, C.C. Homes, G.L. Carr, *Optical properties of barium vanadium sulfide*, Bull. Am. Phys. Soc. **46**, 316 (2001). March Meeting of the American Physical Society, Seattle, WA, March 12-16, 2001.
33. J.J. Tu, C.C. Homes, M. Strongin, D.N. Basov, G.D. Gu, *The absence of superfluid response in the optical conductivity of the edge region of optimally doped $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ Crystals*, Bull. Am. Phys. Soc. **46**, 270 (2001). March Meeting of the American Physical Society, Seattle, WA, March 12-16, 2001.
34. D. Vanderbilt, L. He, J.B. Neaton, M.H. Cohen, and C.C. Homes, *Theory of the dielectric response of $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$* , Fundamental Physics of Ferroelectrics 2002, Washington, DC, February 3-6, 2002.
35. W. Si, E. Cruz, C.C. Homes, P.D. Johnson, and A.P. Ramirez, *Epitaxial thin films of the high-dielectric constant material $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$* , Bull. Am. Phys. Soc. **47**, 894 (2002). March Meeting of the American Physical Society, Indianapolis, IN, March 18-22, 2002.
36. L.M. Miller, G.L. Carr, C.C. Homes, R.P.S.M. Lobo, D.H. Reitze, J.D. La Veigne, D.B. Tanner, D. Talbayev, and L. Mihaly, *New infrared facilities at the National Synchrotron Light Source*, Bull. Am. Phys. Soc. **47**, 1003 (2002). March Meeting of the American Physical Society, Indianapolis, IN, March 18-22, 2002.

37. J.J. Tu, G.L. Carr, C.C. Homes, M. Strongin, P.B. Allen, and Sing-Ik Lee, *Optical properties of c-axis oriented superconducting MgB_2 thin films*, Bull. Am. Phys. Soc. **47**, 504 (2002). March Meeting of the American Physical Society, Indianapolis, IN, March 18-22, 2002.
38. Lixin He, J.B. Neaton, M.H. Cohen, D. Vanderbilt, and C.C. Homes, *A first principles study of the structure and lattice dielectric response of $CaCu_3Ti_4O_{12}$* , Bull. Am. Phys. Soc. **47**, 135 (2002). March Meeting of the American Physical Society, Indianapolis, IN, March 18-22, 2002.
39. C.C. Homes, *Optical properties of the giant dielectric material $CaCu_3Ti_4O_{12}$ and $CdCu_3Ti_4O_{12}$* , Bull. Am. Phys. Soc. **47**, 312 (2002). March Meeting of the American Physical Society, Indianapolis, IN, March 18-22, 2002.
40. C.C. Homes, T. Vogt, M.A. Subramanian, and A.P. Ramirez, *Effect of Cd substitution on the optical and transport properties of $CaCu_3Ti_4O_{12}$* , Bull. Am. Phys. Soc. **48**, 1096 (2003). March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).
41. J. M. Tranquada, C.C. Homes, Q. Li, A.R. Moodenbaugh, and D.J. Buttrey, *Optical conductivity from charge stripes in $La_2NiO_{4+\delta}$* , Bull. Am. Phys. Soc. **48**, 994 (2003). March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).
42. J.J. Tu, C.C. Homes, G. Gu, M. Strongin, *Optical studies of electron-boson interactions in Nb and $Bi_2Sr_2CaCu_2O_{8+\delta}$ single crystals*, Bull. Am. Phys. Soc. **48**, 800 (2003). March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).
43. T. Timusk and C.C. Homes, *The role of magnetism in forming the c-axis spectral peak at 400 cm^{-1} in high temperature superconductors*, Bull. Am. Phys. Soc. **48**, 800 (2003). March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).
44. K. Kim, C.C. Homes, G. Gu and T.W. Noh, *Optical study on Sr_2CuO_3* , Bull. Am. Phys. Soc. **48**, 195 (2003). March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).
45. D.N. Basov, S.V. Dordevic, E.J. Singley, J.H. Kim, M.B. Maple, S. Komiya, Y. Ando, T. Room, R. Liang, D.A. Bonn, W.N. Hardy, J.P. Carbotte, T. Timusk, C.C. Homes, and M. Strongin, *Signatures of bilayer splitting in the c-axis infrared response of multilayer cuprates*, Bull. Am. Phys. Soc. **48**, 93 (2003). March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).

Invited Seminars and Colloquia

Electron-phonon coupling in the conducting organic $(TMTSF)_2X$ salts, McMaster University, Superconductivity Study Group, October, 1990.

Electron-phonon coupling in organic conductors and superconductors, Canadian Institute for Advanced Research, Superconductivity Meeting, , January, 1991.

The optical conductivity of the icosahedral quasicrystals $AlCu(Fe,Ru)$, and $AlMnSi$ and its crystalline approximant (lunch-time seminar), Cornell University, July, 1992.

Optical Properties of Quasicrystals, University of British Columbia, Condensed Matter Seminar, September, 1992.

Optical properties along the c-axis of $YBa_2Cu_3O_{6.70}$: evidence for a pseudogap, University of British Columbia, Condensed Matter Seminar, March, 1993.

Optical properties along the c-axis of $YBa_2Cu_3O_{6+x}$ for $x=0.6 \rightarrow 0.95$, Aspen Winter Condensed Matter Physics Conference, High-Temperature Superconductors and Related Materials, January, 1994.

Pseudogap in the c-axis optical conductivity of oxygen-reduced $YBa_2Cu_3O_{6+x}$ (invited talk), March Meeting of the American Physical Society, Condensed Matter Physics, , March, 1994.

Possible density-of-states effects in Ni-doped $YBa_2Cu_3O_{6.95}$, McMaster University, Superconductivity Study Group, September, 1995.

The effect of impurities on the optical properties of $YBa_2Cu_3O_{6+x}$, SUNY at Stony Brook, Solid State Seminar, April, 1997.

Infrared spectroscopy of solids, SUNY at Binghamton, Chemistry Colloquium, November, 1997.

Charge transport and the optical properties of cuprate superconductors, Asia Pacific Center for Theoretical Physics Winter Workshop on Strongly Correlated Electron Systems, Bokwang Pheonix Park, Kangwon-do, Korea, February 8-13, 1999.

Charge transport and screening effects in cuprate superconductors (NSLS lunch-time seminar), Brookhaven National Laboratory, May, 1999.

Charge transport and screening effects in the high-temperature superconductors, National Synchrotron Light Source Annual Users Meeting, Complex Materials Workshop, May 24-26, 1999.

Screening effects in high-temperature superconductors, (physics colloquium), University of Connecticut, Storrs, CT, February, 2000.

Infrared studies of correlated systems at very long wavelengths at the NSLS, Future Directions for Far-Infrared Sources, 2000 ALS Users' Meeting Workshop, October 18, 2000

Infrared spectroscopy at the National Synchrotron Light Source, (keynote talk), Canadian Light Source: 3rd Users' Meeting, Infrared Spectroscopy and Microscopy Workshop, University of Saskatchewan, Saskatoon, Canada, November 17-18, 2000.

Optical properties of cuprate superconductors and related materials, (invited talk), VII International Conference on Advanced Materials, Cancun, Q.R., Mexico, August 26-30, 2001.

Optical properties of the giant dielectric materials $CaCu_3Ti_4O_{12}$ and $CdCu_3Ti_4O_{12}$, (invited symposium), March Meeting of the American Physical Society, Indianapolis, IN, March 18-22, 2002.

The role of phonons in high-temperature superconductivity – is there one? (invited talk), International Conference on the Low Energy Electrodynamics in Solids (LEES 02), 13-18 October 2002, Montauk (Long Island), NY.

Optical conductivity sum rules and kinetic energy mechanisms in high- T_c materials, (R.G. Herb materials physics seminar), University of Wisconsin, Madison, WI, 26 February 2003.

Energy scales in High- T_c Superconductors (invited talk), International Conference on Dynamic Inhomogeneities in Complex Oxides and Related systems, 14-20 June 2003, Bled, Slovenia.

Energy scales and scaling relations in high-temperature superconductors (seminar), Walther Meissner Institut, Munich, Germany, February 5, 2003.

Universal scaling in high-temperature superconductors (physics colloquium), SUNY Stony Brook, Stony Brook, NY, October 4, 2004.

Universal scaling relation in high-temperature superconductors (seminar), Princeton, Princeton, NJ, November 4, 2004.

Scaling in high-temperature superconductors (seminar), Boston College, Boston, MA, November 16, 2004.

A universal scaling relation in high-temperature superconductors (invited talk), Aspen Winter Conference in Condensed Matter Physics: High-Temperature Superconductivity, January 9-15, 2005.

Universal scaling relation in high-temperature superconductors (invited talk), March Meeting of the American Physical Society, Los Angeles, CA, March 21-25, 2005.

Conference Organization

Program Committee, International Conference on the Low Energy Electrodynamics in Solids (LEES '02), Montauk, New York, October 14-18, 2002.

Committee Memberships

- Chair, Colloquium and Condensed Matter Seminar Committee
- Chair, tenure committee and subcommittee
- Condensed Matter Physics Future Committee
- Computer Security Liaison and System Administration
- Ad-hoc ATF Safety Committee

Professional Activities

- Local contact, NSLS Beamline U10A
- Referee: Nature, Science, The Physical Review B and Physical Review Letters, Physica C, Canadian Journal of Physics, Physica Status Solidi, Applied Physics Letters, American Ceramic Society, Solid State Communications
- External Reviewer: National Science Foundation, The Royal Society of New Zealand

Contributed Talks

March Meeting of the American Physical Society, *Condensed Matter*, Baltimore, Maryland, USA, March, 1985 (paper presented).

Low-Dimensional Conductors and Superconductors, NATO Advanced Study Institute, Magog, P.Q., Canada, August 24-September 6, 1986 (paper presented).

March Meeting of the American Physical Society, *Condensed Matter*, New Orleans, Louisiana, USA, March 21-25, 1988 (paper presented).

March Meeting of the American Physical Society, *Condensed Matter*, Cincinnati, Ohio, USA, March 18-22, 1990 (paper presented).

Gordon Research Conference on Condensed Matter Physics, *Magnetism and Superconductivity*, Wolfeboro, New Hampshire, USA, June 10-14, 1991 (poster session).

March Meeting of the American Physical Society, *Condensed Matter*, Indianapolis, Indiana, USA, March 16-20, 1992 (paper presented).

Canadian Association of Physicists Annual Congress, *Superconductivity Symposium*, University of Windsor, Ontario, June 15-17, 1992 (poster sessions).

March Meeting of the American Physical Society, *Condensed Matter*, Seattle, Washington, USA, March 22-26, 1993 (paper presented).

Canadian Association of Physicists Annual Congress, Simon Fraser University, Burnaby, B.C., June 16-19, 1993 (paper presented).

Canadian Institute for Advanced Research, *Superconductivity Meeting*, Hamilton, Ontario, February 25-27, 1993 (paper presented).

March Meeting of the American Physical Society, *Condensed Matter*, San Jose, CA, March 20-24, 1994 (papers presented).

SPIE International Symposium on Lasers and Integrated Optoelectronics (Spectroscopic Studies of Superconductors), San Jose, CA, January 27 - February 2, 1995 (paper presented).

March Meeting of the American Physical Society, *Condensed Matter*, Kansas City, MO, March 17-21, 1997 (papers presented).

Spectroscopy of Novel Superconductors, September 14-18, 1997, Cape Cod, Massachusetts (poster sessions).

March Meeting of the American Physical Society, *Condensed Matter*, Los Angeles, CA, March 16-20, 1998 (papers presented).

National Synchrotron Light Source Annual Users Meeting, Upton, NY, May 18-20, 1998 (poster session).

Gordon Conference on Condensed Matter Physics, *Correlated Electron Systems*, Plymouth, NH, July 19-24, 1998 (papers presented).

March Meeting of the American Physical Society, *Condensed Matter*, Atlanta, GA, March 20-26, 1999 (papers presented).

March Meeting of the American Physical Society, *Condensed Matter*, Seattle, WA, March 12-16, 2001 (papers presented).

Pittcon, *FTIR Spectroscopy*, New Orleans, LA, March 17-22, 2002 (paper presented).

March Meeting of the American Physical Society, *Condensed Matter*, Indianapolis, IN, March 18-22, 2002 (papers presented).

International Conference on the Low Energy Electrodynamics in Solids (LEES 02), Montauk, NY, October 13-18, 2002 (paper presented).

March Meeting of the American Physical Society, *Condensed Matter*, Austin, TX, March 3-7, 2003 (papers presented).

March Meeting of the American Physical Society, *Condensed Matter*, Montreal, PQ, Canada, March 22-26, 2004 (papers presented).

March Meeting of the American Physical Society, *Condensed Matter*, Los Angeles, CA, March 21-25, 2005 (papers presented).

Honours and Awards

- 1992-1994 Natural Sciences and Engineering Research Council (NSERC) of Canada, Postdoctoral Fellowship, Simon Fraser University
- 1989-1990 University Graduate Fellowship, University of British Columbia
- 1987-1988 British Columbia Government Scholarship, University of British Columbia
- 1983-1985 NSERC Postgraduate Scholarship, University of British Columbia
- 1982-1983 NSERC University Summer Research Award, McMaster University
- 1979-1980 Chancellors Scholarship, McMaster University

Memberships in Professional Societies

- 1985- American Physical Society, member.
- 1985- Canadian Association of Physicists, member.
- 2000- American Association for the Advancement of Science, member.